Signed 9/27/95

4WD-RCRA

SUBJ: Evaluation of Kaiser Aluminum and Chemical Company's Status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: FLD 004 106 811

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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Kaiser Aluminum and Chemical Company's status in relation to the following RCRIS corrective action codes:

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

Region 4 has also added a regional status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the regional status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by EPA for Kaiser. Because assumptions have to be made as to whether or not current human exposures are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility. After this independent media by media examination is presented, then a final recommendation is offered as to the proper CA725 status code for Kaiser.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents: September 16, 1994, Draft RFI Report, Semi-Annual Groundwater Report dated 12/30/94, Semi-Annual Groundwater Report dated 6/30/95.

III. MEDIA BY MEDIA DISCUSSION OF THE STATUS OF CURRENT HUMAN EXPOSURES CONTROLLED

OPTION 3: Groundwater is contaminated onsite and all plausible onsite and offsite human exposures are controlled.

Releases of arsenic from SWMUs identified in the federal HSWA Permit and the RCRA Regulated Unit have contaminated the onsite portion of the Surficial Aquifer at concentrations above the action level for arsenic. For example, several surficial wells around the Inactive Drainfield, the Neutralization Pit and the RCRA Regulated Unit have detected arsenic concentrations above the arsenic maximum contaminant limit (MCL), 0.05 ppm. The maximum historical arsenic value detected in a monitoring well at Kaiser is 0.46 ppm (KS-14). The areal distribution of arsenic

contaminated groundwater appears to be confined to the immediate area surrounding the physical boundaries of the Inactive Drainfield. Over the past ten years of monitoring, little migration of arsenic impacted groundwater from the area around the Inactive Drainfield has been observed.

Although wells screened in the Intermediate Aquifer have not been analyzed for arsenic, past sampling of the Intermediate Aquifer for chlorides, a nonhazardous contaminant which is grossly present in the Surficial Aquifer, suggests that arsenic is not likely to be problem in the deeper aquifer. However, additional groundwater sampling is planned to verify this supposition.

With regard to human receptors to onsite groundwater contamination by arsenic, there are no onsite drinking water wells in any aquifers underlying Kaiser. In other words, there are no human receptors to contaminated groundwater at the Kaiser Plant. Kaiser also recognizes that access to the onsite contaminated portions of the aquifer must be continuously restricted. Therefore, human exposures are controlled.

As a side note, if the onsite groundwater contamination were to migrate offsite, there would be plausible human exposures. For example, there are twenty-three known private drinking water wells downgradient or side-gradient of the facility. Although information is incomplete, it is clear that some of these wells are screened in the Intermediate Aquifer while others are probably screened, at least partly, in the Surficial Aquifer.

The nearest of these twenty-three drinking water wells are within one hundred feet of Kaiser's property boundary. The downgradient/side-gradient private drinking water wells which are the farthest from the facility are approximately one thousand feet away. Groundwater sampling is planned to verify the belief that these groundwater wells are not impacted by the arsenic contamination. Based on the distribution of low chloride concentrations in these offsite wells (a conservative tracer), it is assumed that no groundwater contamination by arsenic is currently present in the Intermediate Aquifer. In addition, a groundwater recovery system which includes ten (10) recovery wells along with withdrawal of water from the North Pond have been installed and operational for a number of years. Specifically, operation of the recovery well system began in March of 1986. The pumping of the North Pond has occurred since 1972. The recovery well system addresses the arsenic contamination in the Surficial Aquifer near the Inactive Drainfield. The pumping of the pond basically serves to reduce the vertical head difference between the North Pond and the potentiometric level of the Intermediate Aquifer. In addition, the lowered potentiometric level of the Surficial Aquifer results in the pond functioning as a large "recovery well" to capture any

contamination in the Surficial Aquifer before it migrates offsite. These two (2) recovery systems are required as part of the Closure/Post-Closure Permit in order to address both the arsenic and chloride concentrations in the Surficial Aquifer. In summary, future offsite human exposures to contaminated groundwater are unlikely because of the successful operation of the onsite groundwater recovery systems.

Based on the above Option 3 discussion, plausible human exposures to onsite groundwater contamination are controlled by access controls. Because there is no offsite groundwater contamination, there are no offsite human exposures which need controlling.

OPTION 1: Surface water is not contaminated.

Although arsenic releases to surface water have occurred, surface water associated with the facility is not contaminated above the MCL. Arsenic concentrations in the North Pond range from 0.035 ppm to 0.058 ppm. The average arsenic concentration in the North Pond water is 0.046. The MCL for arsenic is 0.05 ppm.

Because there is no surface water contamination by arsenic above its MCL, **there are no current human exposures which must be controlled.**

OPTION 3: Soil and sediment are contaminated onsite and all plausible onsite and offsite human exposures are controlled.

Soil at the Inactive Drainfield and sediment at the North Pond are contaminated with arsenic concentrations above relevant action levels (0.4 ppm for soil from the November 1994 Soil Screening Level Guidance and 8 ppm for sediment (Region 4's Sediment Screening Levels as of 2/16/94). The horizontal extent of soil contamination in the Inactive Drainfield is approximately 640 feet by 700 feet. The thickness of arsenic contaminated soil above 0.4 ppm is approximately ten (10) feet. The horizontal extent of sediment contamination in the North Pond is approximately 1,200 feet by 400 feet. The thickness of arsenic contaminated sediment above 8 ppm is approximately seven feet. The RCRA Regulated Unit contains arsenic contaminated soil. The RCRA Unit covers an area of approximately 100 feet by 300 feet.

Kaiser has controlled access to soil contamination by the installation of a site-wide fence with restricted access. In addition, the soil contamination at the RCRA Regulated Unit is capped and signs are present notifying personnel not to disturb the cap. Need to access the contaminated SWMUs is not required for Kaiser to operate. Therefore, onsite worker access to onsite

soil and sediment contamination does not occur during normal working operations. Worker entry to the contaminated areas is limited to personnel who are trained to work in such contaminated areas.

OPTION 1: Air not reasonably expected to be contaminated.

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs at the facility are not expected to be occurring above relevant action levels. For example, the contamination in the North Pond is not subject to air dispersion due to its presence under water. Arsenic contaminated soil at the Inactive Drainfield is not believed to be amenable to significant air transportation. Furthermore, the interspersing of pioneer vegetation serves to stabilize the soil and limit air transporation of hazardous constituents. The contaminated soil at the RCRA Regulated Unit is located under a cap. **Because air contamination is not expected given the site conditions, there are no human exposures which must be controlled.**

IV. STATUS CODE RECOMMENDATION FOR CA725:

Sub-option 1B: Plausible onsite human exposures are controlled by implementation of access controls

There is onsite contamination above relevant action levels for three environmental media: soil, sediment and groundwater. As discussed in Section III, access controls have been initiated at each of these media. There is no known offsite contamination by hazardous constituents. **Because access controls are actively controlling human exposures in all contaminated environmental media of concern, it is recommended that CA725 YE be entered into RCRIS.**

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA725:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NC No releases to groundwater.

Region 4 has also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation

will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation performed for Kaiser. Please note that CA750 is based on the adequate control of **all** contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on control of contaminated groundwater at the facility are based on the following reference documents: September 16, 1994, draft RFI Report, Semi-Annual Groundwater Report dated 12/30/94, Semi-Annual Groundwater Report dated 6/30/95.

VI. STATUS CODE RECOMMENDATION FOR CA750:

RECOMMENDATION OPTION 1: CA750 YE; Groundwater contamination exists and releases are controlled

The groundwater is contaminated at concentrations above relevant action levels. Specifically, releases of arsenic from the Inactive Drainfield and the RCRA Regulated Unit have contaminated onsite groundwater at concentrations above relevant action levels. Several surficial wells around/near the location of the Inactive Drainfield have detected arsenic concentrations above the maximum contaminant limit (MCL) for arsenic, 0.05 ppm. The maximum historical arsenic value detected in a monitoring well at Kaiser is 0.46 ppm (KS-14).

The groundwater contamination by arsenic appears to be confined to the immediate area surrounding the Inactive Drainfield. Little measurable migration of arsenic impacted groundwater above the arsenic MCL from this area has been observed. Past sampling of the Intermediate Aquifer for chlorides, conservative tracers which are present in the Surficial Aquifer at extremely high concentrations, suggest that arsenic migration to the deeper aquifer is unlikely. However,

additional groundwater sampling is planned to verify this supposition.

In addition to the observed groundwater contamination, there are control measures present at the facility which successfully control the physical migration of contaminated groundwater beyond the facility boundary and to the Intermediate Aquifer (i.e., the designated boundaries for CA750). A groundwater recovery system which includes ten (10) recovery wells and the pumping of the North Pond have been installed and operational for a number of years. Specifically, operation of the recovery well system began in March of 1986. The recovery well system addresses the arsenic groundwater contamination in the Surficial Aquifer near the Inactive Drainfield. The pumping of the North Pond began in 1976. The pond pumping basically serves to reduce the vertical head difference between the North Pond and the potentiometric level of the Intermediate Aquifer. In addition, the lowered potentiometric level of the Surficial Aquifer results in the pond functioning as a large "recovery well" to capture any contamination in the Surficial Aquifer before it migrates offsite. The well system and the pond pumping system are required as part of the Closure/Post-Closure Permit in order to address both the arsenic and chloride concentrations in the Surficial Aquifer.

Based on the above discussion, it is recommended that CA750 YE be entered into RCRIS.